

# Release of cervical muscular tension improved severe pruritus in moderate-to-severe atopic dermatitis: A case series



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**Key words:** atopic dermatitis; cervical muscular tension; complementary and alternative therapy; pruritus; stressor.

## INTRODUCTION

Patients with moderate-to-severe atopic dermatitis (AD) recalcitrant to topical corticosteroids frequently suffer from intense and severe pruritus, leading to sleep deprivation and poor quality of life,<sup>1</sup> which is attributed to psychological stress.<sup>2</sup> Therefore, stress management is often considered important for improvement in AD symptoms as an adjunct to standard dermatologic treatment.<sup>3</sup> Psychological stress is known to be a major causal factor for muscular stiffness<sup>4</sup> and decreased range of motion (ROM) in the cervical spine.<sup>5</sup> Examination of our patients with severe AD found cervical muscular stiffness and tension with palpation. To the best of our knowledge, there have been no studies focusing on this feature of AD.

Osteopathy is reported to be effective for allergic diseases such as pediatric asthma,<sup>6</sup> irritable bowel syndrome,<sup>7</sup> and rheumatic disease.<sup>8</sup> We hypothesized that osteopathic manipulative treatment (OMT) relieves and improves cervical muscular stiffness and reduces psychological stress, leading to improvements in these allergic diseases and can help mitigate the antipruritic effects in patients with severe AD. In this study, we present 3 cases of patients with moderate-to-severe AD who underwent OMT to relieve muscular stiffness around the cervical spine.

## CASE REPORT

Three patients with moderate-to-severe AD underwent treatment to relieve muscular stiffness around the cervical spine with the Spineliner SA201

### Abbreviations used:

AD:	atopic dermatitis
AEC:	absolute eosinophil counts
DLQI:	Dermatology Life Quality Index
EASI:	eczema area severity index
LDH:	lactate dehydrogenase
OMT:	osteopathic manipulative treatment
ROM:	range of motion
sIGA:	static Investigator's Global Assessment
TARC:	serum thymus and activation-regulated chemokine
VAS:	visual analog scale

(Sigma Inc, Cranberry Township, PA),<sup>9</sup> which was used in OMT.<sup>10</sup> Spineliner is a technical device used for computer-assisted physical diagnosis and therapy of the musculoskeletal system, especially the spine. This study was approved by our institutional review board. Written informed consent was obtained from all patients.

The treatment involved stimulation of resonance oscillation of the muscles, which was controlled by the Spineliner at all contact points, especially those in the face and occipital region, neck, and pelvis, which could be achieved during one outpatient visit. Treatment was completed after confirming the balance of the muscle tension, improvement in cervical stiffness, and improvement in the ROM during flexion and extension by manual palpation. Each treatment session lasted approximately 10 to 15 minutes and was performed once or twice a week for 3 months. A total of 15 treatments were performed per patient. Patients were instructed to continue their

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**Table I.** Patient details

	Case 1		Case 2		Case 3	
Age (y)	24		28		46	
Sex	M		M		F	
Onset age (y)	0		2		6	
Pre/Post	Pre	Post	Pre	Post	Pre	Post
EASI	26.05	6.1	20.6	7.65	32	10.6
sIGA	4	1	4	2	4	2
DLQI	15	38	31	32	22	28
IgE (U mL <sup>-1</sup> )	2076	5610	7713	9463	79	97
TARC (pg mL <sup>-1</sup> )	3127	1346	3202	1119	1495	413
AEC (μ L <sup>-1</sup> )	1622	959	1332	1722	1046	533
LDH (IU L <sup>-1</sup> )	266	200	331	256	335	203
Cervical ROM arc*	103	123	114	127	98	105

Post, Post-treatment; Pre, pretreatment.

\*Cervical ROM arc was measured by radiography before treatment and after 15 treatment sessions.

daily skin care routine. All treatments were performed at Hosono Clinic and performed only by the director.

The severity of AD was assessed using the Eczema Area Severity Index (EASI) and static Investigator's Global Assessment (sIGA).<sup>11</sup> The intensity of pruritus and sleep disturbance was evaluated using the visual analog scale (VAS),<sup>12</sup> which involved administration of questionnaires at every visit. Health-related quality of life was evaluated according to the Dermatology Life Quality Index (DLQI). EASI and sIGA values; absolute eosinophil counts (AEC); and lactate dehydrogenase (LDH), thymus and activation-regulated chemokine (TARC), and IgE levels were tested before treatment and after the final session (Table I). Cervical muscular tension was evaluated by examining the cervical ROM by radiography<sup>13</sup> before treatment and after the 15th treatment session (Table I).

All 3 patients were resistant to topical corticosteroids, and steroid use was discontinued for at least 28 days of washout prior to OMT. To be eligible to study enrollment, patients were required to have a score of at least 10 on the EASI, a score for pruritus of at least 50 mm on VAS, and a score of at least 3 on the sIGA. We planned to use topical corticosteroids for rescue therapy as needed, but this was not necessary. Patient characteristics are shown in Table I.

Patient 1 was a 24-year-old man with AD that developed soon after birth. He previously used topical corticosteroids for eczema on his face, elbow, and knee successfully, but the eczema showed repeated exacerbation and remission.

During the study period, his skin symptoms were acute and exacerbated by psychological stress related to his work. Pruritus did not improve with topical corticosteroids, and he experienced

nocturnal sleep disturbance. He presented with eczema with severe pruritus on his neck (Fig 1, A). OMT improved his pruritus; sleep disturbance (Fig 2); dermatitis (Fig 1 B); and EASI, sIGA, and DLQI scores. TARC, AEC, LDH levels, and cervical ROM arc were improved, but the IgE level did not improve (Table I).

Patient 2 was a 28-year-old man with generalized AD for more than 25 years. At age 15, he stopped using topical preparations, including corticosteroids, because the itching did not improve.

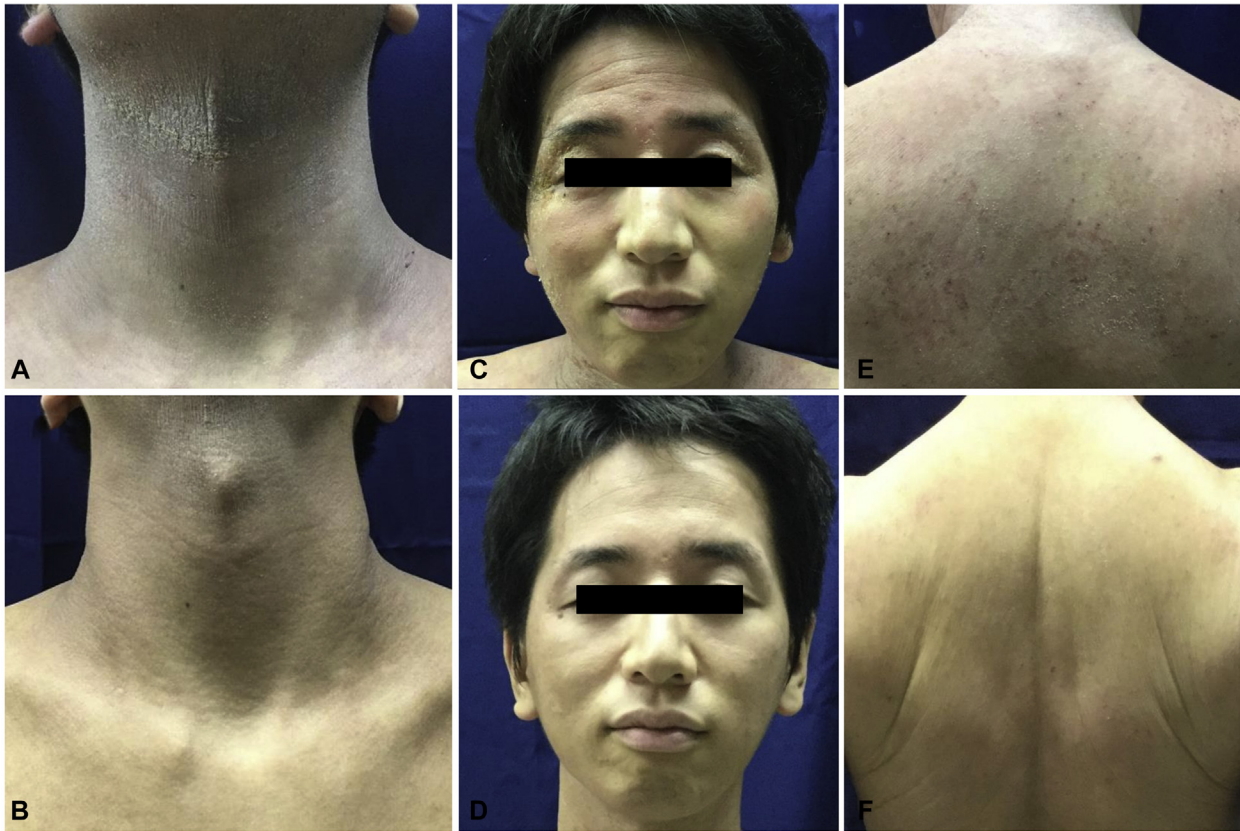
He presented with very prominent itching on his face and oozing crusts on his face, neck, and auricle (Fig 1, C). After OMT, pruritus, sleep disturbance (Fig 2), and the exudation from his face and neck improved. Treatment improved his dermatitis (Fig 1, D); EASI, sIGA, and DLQI scores; TARC and LDH levels; and cervical ROM arc. The IgE and AEC levels did not improve (Table I).

Patient 3 was a 46-year-old woman who suffered from AD for more than 40 years. Eczema was observed on her face, elbow, and back of her knees, for which she was previously prescribed topical corticosteroids. Steroid addiction was diagnosed at the age of 25 years, and she stopped using topical corticosteroids at the age of 41 years because her pruritus and eczema did not improve.

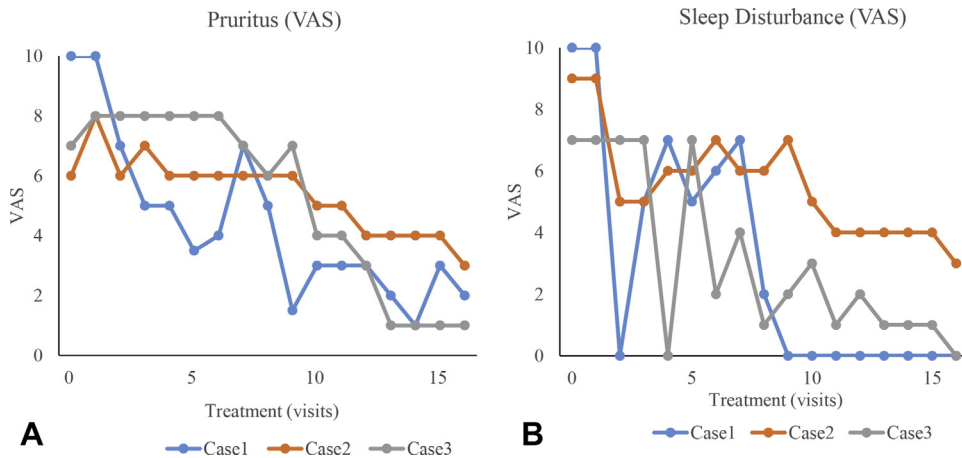
She presented with generalized erythematous patches of eczema with prominent itching on her back (Fig 1, E). OMT improved her pruritus; sleep disturbance (Fig 2); AD (Fig 1, F); EASI, sIGA, and DLQI scores; TARC, AEC, and LDH levels; and cervical ROM arc. Her IgE level did not improve (Table I).

## DISCUSSION

This study describes 3 patients with moderate-to-severe AD recalcitrant to topical corticosteroids who



**Fig 1.** Clinical images of the 3 cases at pretreatment (A, C, E) and posttreatment (B, D, F). A and B, Neck of patient 1. C and D, Face of patient 2. E and F, Back of patient 3.



**Fig 2.** Visual analog scale scores for pruritus (A) and sleep disturbance (B) improved gradually.

underwent OMT with relief of subjective and objective AD symptoms. In all cases, the VAS scores of pruritus, DLQI, and sleep disturbance measures were all improved. TARC values correlated with AD severity and improved in all 3 cases after 15 OMT sessions. The cervical ROM arc was improved in all cases, indicating reduced cervical muscular tension.

Current dermatologic therapies are often inadequate among AD patients with severe pruritus. Patients may therefore benefit from judicious use of complementary and alternative interventions such as acupuncture, relaxation, and stress management. These treatments are being increasingly used as adjuncts to conventional dermatologic therapy.<sup>14</sup>

Osteopathy is a complementary and alternative health approach that emphasizes the role of the musculoskeletal system in health and promotes optimal function of the body. The technique uses various manual techniques of OMT to release muscular stiffness and improve the function of body tissues.

In asthmatic patients, OMT has been shown to increase rib cage mobility and vital capacity, improve the function of the thoracic diaphragm, promote clearance of airway secretions, and possibly improve autoimmune function.<sup>6</sup> Furthermore, OMT can be used to maximize respiratory function. In the case of irritable bowel syndrome, OMT can normalize supply of blood circulation and lymphatic fluid levels, restore the balance of autonomic nerves, and restore normal elasticity and motility of the viscera or peritoneal structures around the viscera.<sup>7</sup>

In these 3 cases, OMT improved cervical muscular stiffness and reduced symptoms of AD. We speculate that OMT might normalize blood and lymphatic circulation, restore the balance of autonomic nerves, and enhance the autoimmune function of the skin.

The relief of cervical muscular tension through OMT possibly contributes to the reduction of pruritus in AD that is resistant to topical corticosteroids, despite involvement of the immune response<sup>15</sup>; the effects on AD may be due to improvement in cervical muscular stiffness caused by decrease in psychological stressors.

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